

2013 ANNUAL REPORT on INTERBASIN TRANSFERS
for
RTP South and the Towns of Cary, Apex, and Morrisville

Prepared for:

Town of Apex

Town of Cary

Town of Morrisville

RTP South/Wake County

Submitted to:

North Carolina Division of Water Resources

April 2014

Prepared by:

Sydney Paul Miller

Water Resources Engineer

Town of Cary

PO Box 8005

Cary, NC 27512-8005

919-462-2066

sydney.miller@townofcary.org

Table of Contents

Executive Summary.....	ES-1
1. Jordan Lake Allocation Monitoring.....	1-1
2. IBT Monitoring.....	2-1
3. Compliance with Certificate Conditions	3-1
Appendix A: Daily Tracking of Combined Jordan Lake Water Supply Allocations for 2013.....	A-1
Appendix B: Daily Interbasin Transfer Estimates for 2013.....	B-1
Appendix C: Water Shortage Response Plans Updated for 2013.....	C-1

Executive Summary

The 2013 Annual Report on Interbasin Transfers for RTP South and the Towns of Cary, Apex, and Morrisville includes monitoring data for daily tracking of IBT amounts and combined Jordan Lake allocations held by the certificate holders.

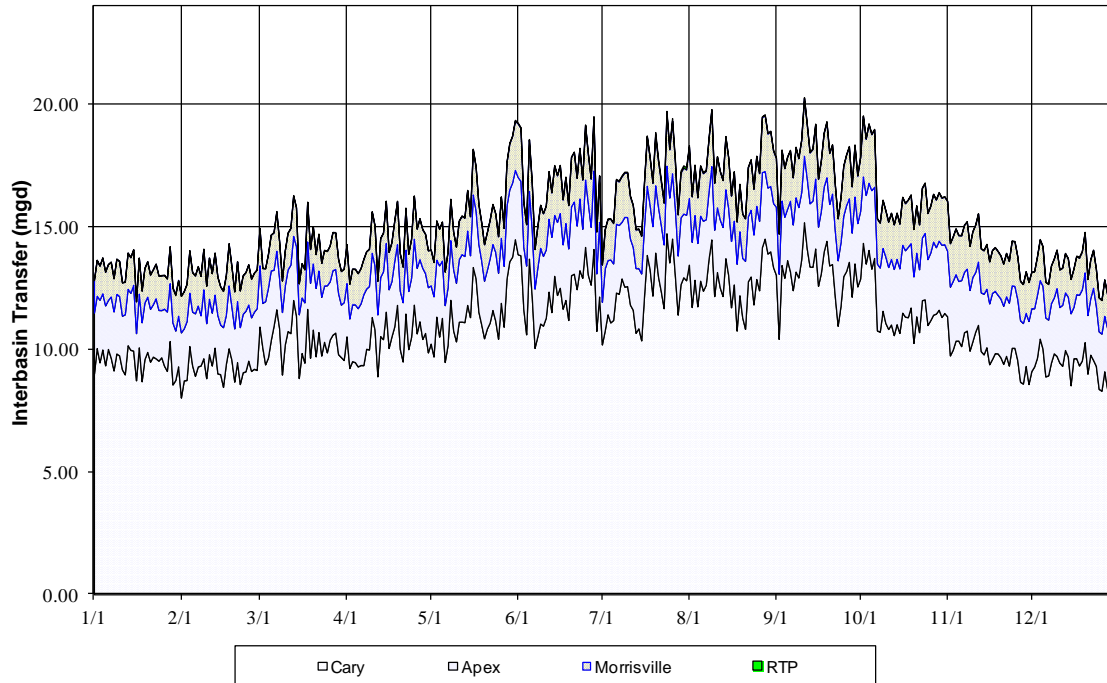
The Town of Cary and Morrisville merged their utility systems on April 3, 2006. Cary is responsible for providing billing and system maintenance for water and sewer services to Morrisville and RTP South customers. Morrisville and Wake County RTP South, continue to hold independent Jordan Lake water supply allocations.

In 2013, the certificate holders complied with all conditions of the IBT certificate. The maximum daily IBT amount for Cary, Apex, Morrisville, and RTP South was 19.2 million gallons per day (mgd). Maximum day IBT amounts and a summary of Jordan Lake withdrawals are provided in Table ES-1. The daily IBT amounts in 2013 for Cary, Apex, Morrisville, and RTP South are shown in Figure ES-1. The required average annual return of reclaimed water to the Cape Fear or Haw basin was 0.0 mgd and the actual average reclaimed water return was 1.9 mgd (see Table ES-2). The annual average IBT amount was 13.8 mgd.

Calendar Year	Withdrawal from Haw Subbasin (mgd) ¹		Total Return to Haw Subbasin (mgd) ⁴		Interbasin Transfer (mgd)		IBT as % of Certificate
	Average Annual	Max. Day	Average Annual	Max. Day	Average Annual	Max. Day	Max.
1998	10.8	15.7	1.7	3.5	9.0	14.3	90%
1999	9.2	15.6	1.6	4.2	7.6	12.9	81%
2000	7.3	14.2	1.1	4.4	6.2	11.8	74%
2001 ²	9.7	18.8	2.8	9.4	6.8	15.0	63% ³
2002	16.9	29.2	3.5	10.3	13.5	22.5	94%
2003	15.9	22.7	2.5	5.5	13.4	17.8	74%
2004	17.0	25.5	2.8	6.1	14.2	22.6	94%
2005	18.4	26.1	3.8	8.1	14.5	19.6	82%
2006	17.6	25.9	3.3	6.6	14.3	20.8	87%
2007	19.8	30.8	3.8	7.7	15.9	23.5	98%
2008	18.9	28.3	4.6	9.1	14.1	20.9	87%
2009	19.5	28.0	5.5	11.3	14.0	20.4	85%
2010	20.9	33.1	6.5	12.1	14.4	22.3	93%
2011	20.0	33.6	5.9	14.3	14.1	21.7	90%
2012	19.3	31.1	5.4	9.1	13.9	22.7	94%
2013	18.5	25.1	4.7	7.5	13.8	19.2	80%

1. Includes water use by Cary, Apex, Morrisville, and RTP South.
2. Withdrawals in 2001 were unusually high due to construction activities at the Cary/Apex WTP and do not reflect actual potable water demands.
3. Permitted IBT amount increased from 16 mgd to 24 mgd in July 2001. The maximum day IBT of 15.0 mgd occurred after the permitted amount increased to 24 mgd.
4. Includes consumptive use.

Figure ES-1: Daily Interbasin Transfer for Cary, Apex, Morrisville and RTP South [Haw Sub-Basin to Neuse Sub-Basin]



Summary of Compliance with IBT Certificate Condition No. 1							
Year	Neuse Finished Water from the Haw (mgd)	Peaking Factor	16 mgd MDD adjusted to ADD	Consumptive Use Factor (%)	Neuse Consumptive Use (from the Haw) (mgd)	Required Return (mgd)	Amount Returned (mgd)
	(a)	(b)	(c)=16/(b)	(d)	(e)=(a)*(d)	(f)=(a)-(c)-(e)	(g)
2011	12.0	1.64	9.76	20%	2.4	0.0	2.0
2012	11.6	1.64	9.76	20%	2.3	0.0	2.0
2013	11.4	1.64	9.76	20%	2.3	0.0	1.9
a = Average annual transfer from Haw to Neuse (see Table B-1)							
b = Peaking factor specified in Certificate for first year, and to be approved by DWR thereafter							
d = Percent consumptive use specified in Certificate for first year and to be approved by DWR thereafter							
g = Average annual wastewater discharges and water reuse in Haw and Cape Fear Basins (see Table B-1)							

1.0 Jordan Lake Allocation Monitoring

The combined Jordan Lake water supply allocation for Cary, Apex, Morrisville, and RTP South can be tracked on a daily basis. Daily tracking of the combined Jordan Lake allocation for the period January 1, 2013 through December 31, 2013 is included in [Appendix A](#). The water supply pool for each allocation holder was full on January 1, 2013.

The Town of Cary and the Town of Morrisville merged their utility systems on April 3, 2006, and subsequently the Town of Cary began providing billing, facilities, and system maintenance for water and sewer services to Morrisville customers. Morrisville continues to hold its own Jordan Lake water supply allocation. For purposes of reporting on Jordan Lake allocations and IBT, Cary and Morrisville measurements will continue to be reported separately.

For 2013, the maximum day withdrawal for all certificate holders was 25.1 mgd, which occurred on July 26th. The average daily withdrawal for all certificate holders was 18.5 mgd during 2013 (Table 1-1).

Year	Average Annual Withdrawal (mgd)	Maximum Daily Withdrawal (mgd)
1998 ²	10.8	15.7
1999 ²	9.2	15.6
2000	7.3	14.2
2001	9.7	18.8
2002	16.9	29.2
2003	15.9	22.7
2004	17.0	25.5
2005	18.4	26.1
2006	17.6	25.9
2007	19.8	30.8
2008	18.7	28.3
2009	19.5	28.0
2010	20.9	33.1
2011	20.0	33.6
2012	19.3	31.1
2013	18.5	25.1

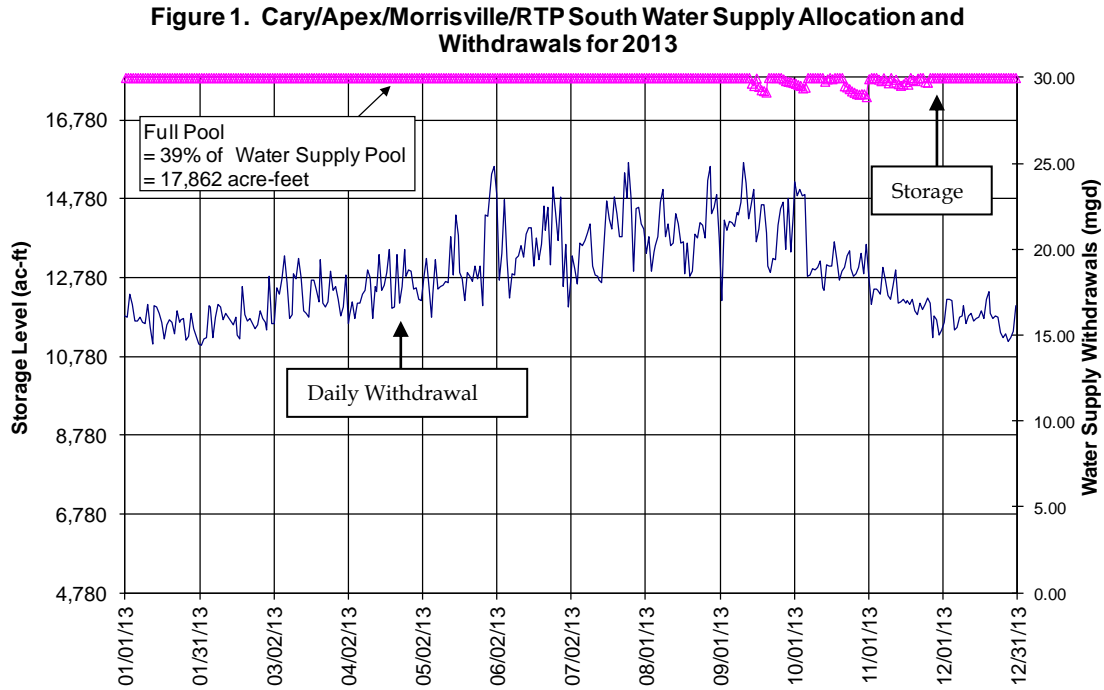
1. Withdrawals from Jordan Lake at the Cary/Apex raw water intake. Includes water use by Apex, Cary, Morrisville and RTP South. Does not include water use by Durham.

2. Includes water use by Holly Springs from 1/1/98 to 6/30/99

Table 1-2 presents historical water use for the certificate holders (Cary, Apex, Morrisville, and RTP South) based on finished water produced at the Cary/Apex WTP plus purchases. In 2013, finished water demands averaged 16.3 mgd and the maximum day demand was 22.8 mgd. The maximum day peaking factor was 1.40 in 2013.

Table 1-2			
Summary of Finished Water Demands			
Year	Average Annual Demand (mgd)	Maximum Daily Demand (mgd)	Maximum Day/Average Day Peaking Factor
1998 ²	12.2	20.1	1.65
1999 ²	12.6	21.5	1.71
2000	13.0	21.6	1.66
2001	14.2	22.0	1.55
2002	14.9	25.6	1.72
2003	13.9	19.9	1.43
2004	14.8	25.8	1.74
2005	15.6	22.6	1.45
2006	15.7	24.0	1.53
2007	17.9	28.1	1.57
2008	16.1	25.9	1.61
2009	16.1	24.6	1.53
2010	17.1	27.8	1.63
2011	17.2	27.6	1.61
2012	16.5	29.0	1.75
2013	16.3	22.8	1.40
1. Includes finished water delivered to the distribution system by the Cary/Apex WTP.			
2. Includes water use by Holly Springs from 1/1/98 to 6/30/99.			

Water distributed to Morrisville and RTP South is not measured on a daily basis. Therefore, accurate daily tracking of Jordan Lake water supply allocations can only be performed for the combined Jordan Lake water supply allocation for Cary, Apex, Morrisville, and RTP South. Figure 1 shows the partners’ combined water supply withdrawals and allocation storage level for 2013. The minimum storage level for the combined allocation was 97.3% occurring on October 31, 2013. The average percent storage was 99.9% for 2013.



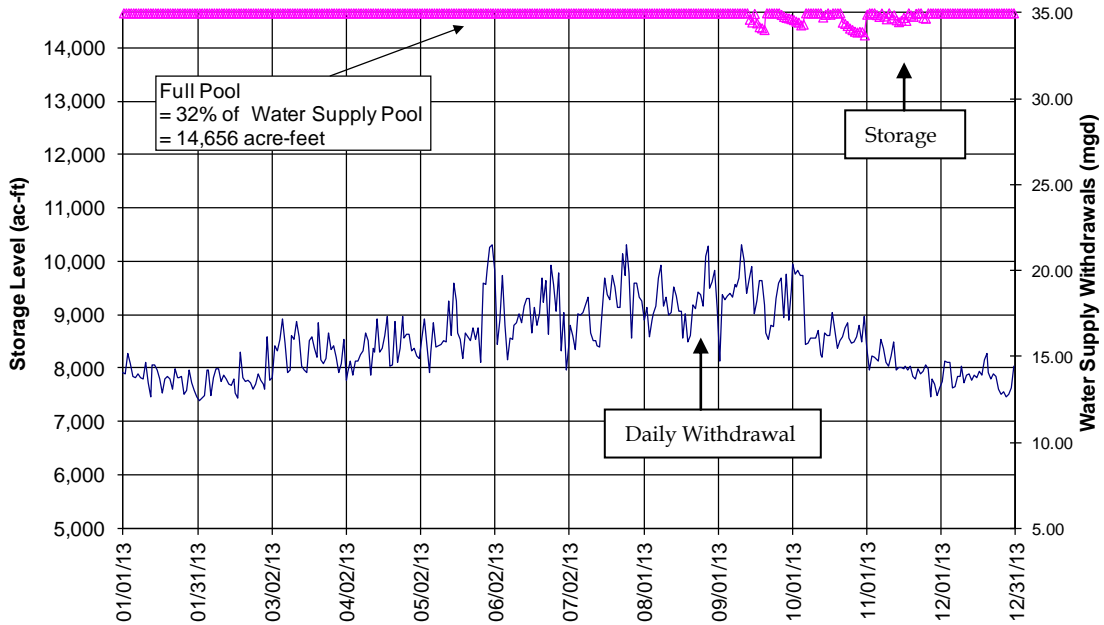
Individual Jordan Lake water allocation withdrawals are estimated on a daily basis using monthly Morrisville and RTP South water usage records. Daily water use for Morrisville is estimated from monthly retail billing data by assuming that water usage variations between billing periods follow the same patterns as the total combined water use (“Net Cary” use). Daily water use for RTP South is estimated similarly using monthly retail billing data, assuming that water usage trends throughout the month follow similar patterns as Net Cary. For a given day, the ratio of daily Net Cary water use to average Net Cary water use for the period between monthly retail bills is applied to Morrisville and RTP South monthly retail billed use.

Levels in individual water supply pools are calculated on a daily basis using daily water use estimates and daily lake inflows. Lake inflow data is obtained from the US Army Corps of Engineers and allocated to each water supply pool according to the percentage allocation held. Any inflow amount that would fill the allocated storage above 100 percent is not stored. Any time the elevation in Jordan Lake is at or above 216 feet mean sea level, the water supply pools are reset to 100 percent full. If any allocation holder or larger pool has excess inflow, it is first distributed within that pool to another user, if needed, before being “spilled.”

The daily Cary/Apex withdrawal amounts are estimated by subtracting the estimated daily Morrisville and RTP flows from the metered total daily flow; Cary amounts are then estimated by subtracting the daily recorded Apex flow from the remainder.

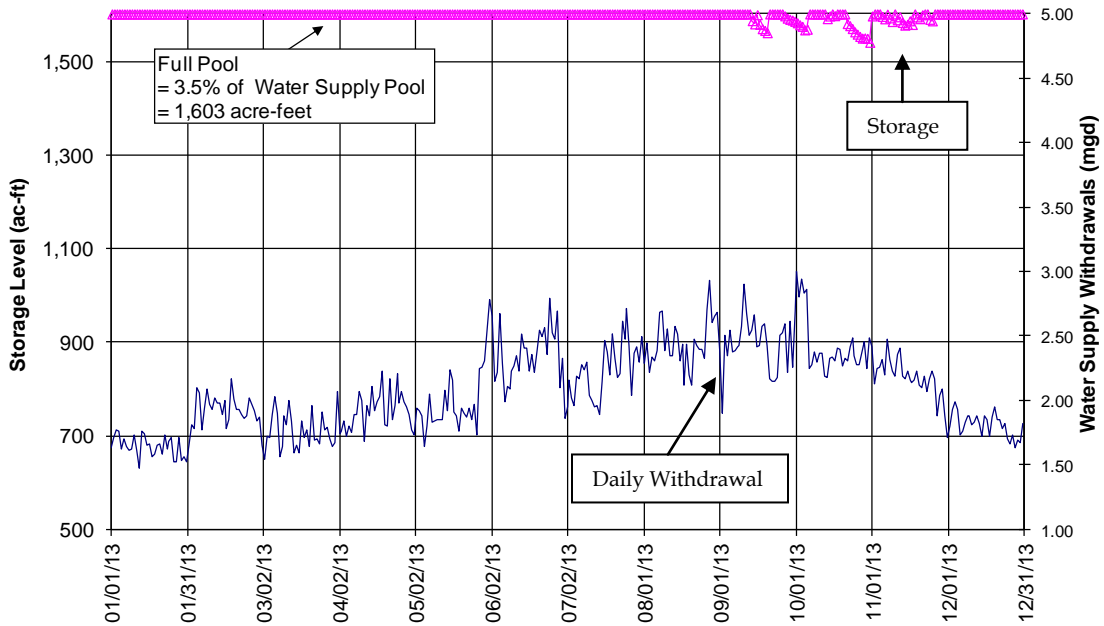
Cary/Apex holds a water supply storage allocation equal to 32 percent of the water supply pool or 14,656 acre-feet. Figure 2 shows the Cary/Apex water supply withdrawals and the allocation storage level for 2013. The minimum storage level for the Cary/Apex allocation was 97.2% occurring on October 31, 2013. The average percent storage was 99.9% for 2013.

Figure 2. Cary/Apex Water Supply Allocation and Withdrawals for 2013



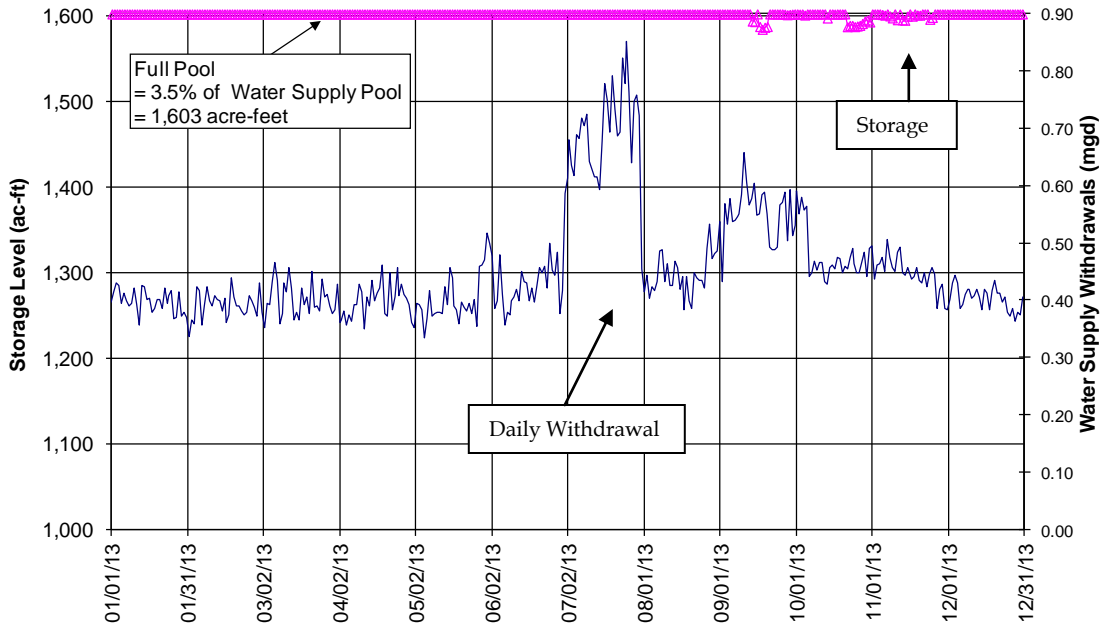
Morrisville holds a water supply storage allocation equal to 3.5 percent of the water supply pool or 1,603 acre-feet. Figure 3 shows the Morrisville water supply withdrawals and allocation storage level for 2013. The minimum storage level for the Morrisville allocation was 96.2% occurring on October 31, 2013. The average percent storage was 99.8% for 2013.

Figure 3. Morrisville Water Supply Allocation and Withdrawals for 2013



RTP South holds a water supply storage allocation equal to 3.5 percent of the water supply pool or 1,603 acre-feet. Figure 4 shows the RTP South supply withdrawals and allocation storage level for 2013. The minimum storage level for the RTP South allocation was 98.8% occurring on September 18, 2013. The average percent storage was 100.0% for 2013.

Figure 4. RTP South Water Supply Allocation and Withdrawals for 2013



2.0 IBT Monitoring

Daily IBT estimates for the certificate holders are included in [Appendix B](#). Estimates are provided for the period January 1, 2013 through December 31, 2013. *The maximum day IBT transfer during the calendar year 2013 was 19.2 mgd, which occurred on July 24, 2013.* This represents 80 percent of the permitted IBT transfer, 24 mgd, under the certificate approved by the EMC on July 12, 2001. The annual average IBT transfer was 13.8 mgd during calendar year 2013. The average daily consumptive use was 11.3% for the period January 1, 2013 through December 31, 2013. Historical consumptive use is shown in [Table 2-1](#).

Year	Average Daily Finished Water Demand (mgd)	Average Daily Consumptive Use (mgd)	% Consumptive Use
1998 ¹	12.2	2.4	19.7%
1999 ¹	12.6	2.1	16.7%
2000	13.0	1.8	13.8%
2001	14.1	2.0	14.7%
2002	14.9	3.0	20.1%
2003	13.9	1.4	10.0%
2004	14.8	2.2	14.9%
2005	15.6	2.7	17.3%
2006	15.7	2.3	14.6%
2007	17.9	4.2	23.5%
2008	16.1	2.5	15.5%
2009	16.1	2.3	14.4%
2010	17.1	3.1	17.9%
2011	17.2	3.1	17.9%
2012	16.5	2.0	12.3%
2013	16.3	1.8	11.3%

1. Includes some water use by Holly Springs. Holly Springs purchased water from Apex in 1998 and 1999.

The distribution of consumptive uses between the Haw, Cape Fear, and Neuse River subbasins for 2013 was estimated based on historical water use in each basin as determined by billing records for each certificate holder. During 2013, based on the 2012 annual report, it was assumed that 29.0% of water use occurred in the Haw subbasin, 0.9% of water use occurred in the Cape Fear subbasin, and 70.1% of water use occurred in the Neuse River subbasin. The certificate holders track historical use by assigning a subbasin to each customer. Data on the distribution of water use between subbasins for each entity from 2000 through 2013, based on billing records, is shown in Table 2-2. For purposes of calculating daily IBT amounts in 2014, the certificate holders estimate that 29.0% of their water use will occur in the Haw subbasin and that 0.9% of their water use will occur in the Cape Fear subbasin.

TABLE 2-2
Distribution of Water Billed to Retail Customers by River Subbasin

Year	Cary			Apex					Morrisville ¹			RTP South		
	Total Water Use (mgd)	Water Use in Haw (mgd)	% Use in Haw	Total Water Use (mgd)	Water Use in Haw (mgd)	% Use in Haw	Water Use in Cape Fear (mgd)	% Use in Cape Fear	Total Water Use (mgd)	Water Use in Haw (mgd)	% Use in Haw	Total Water Use (mgd)	Water Use in Haw (mgd)	% Use in Haw
2000 ⁽¹⁾	9.29	0.82	8.8%	1.65	0.82	49.9%	0.07	4.3%	0.86	0.05	6.20%	0.27	0.27	100%
2001	10.73	1.07	10.0%	1.88	1.03	54.8%	0.08	4.3%	1.05	0.06	6.20%	0.31	0.31	100%
2002	10.23	1.23	12.0%	2.15	1.29	60.0%	0.08	3.7%	1.18	0.14	11.2%	0.39	0.39	100%
2003	9.02	0.75	8.3%	1.94	1.15	59.3%	0.073	3.8%	1.10	0.15	14.0%	0.36	0.36	100%
2004	9.69	1.21	12.5%	2.12	1.28	60.2%	0.080	3.8%	1.26	0.19	14.9%	0.35	0.35	100%
2005	10.38	1.47	14.2%	2.25	1.40	62.2%	0.092	4.1%	1.32	0.21	16.1%	0.44	0.44	100%
2006	9.79	1.15	11.8%	2.20	1.35	61.5%	0.085	3.9%	1.36	0.22	16.1%	0.41	0.41	100%
2007	10.90	1.52	13.9%	2.75	1.74	63.3%	0.110	4.0%	1.39	0.24	17.3%	0.48	0.48	100%
2008	9.83	1.43	14.5%	2.36	1.46	62.0%	0.09	4.0%	1.33	0.26	19.5%	0.41	0.41	100%
2009	10.23	1.68	16.4%	2.65	1.68	63.3%	0.13	5.1%	1.40	0.29	20.4%	0.39	0.39	100%
2010	11.34	2.09	18.4%	2.97	1.89	63.6%	0.14	4.6%	1.64	0.34	20.8%	0.40	0.40	100%
2011	11.29	1.98	17.5%	2.73	1.72	62.9%	0.13	4.6%	1.71	0.35	20.6%	0.43	0.43	100%
2012	10.56	1.83	17.3%	2.63	1.62	61.6%	0.13	5.1%	1.62	0.32	19.9%	0.42	0.42	100%
2013	9.89	1.91	19.3%	2.60	1.56	60.2%	0.18	6.9%	1.46	0.33	22.6%	0.39	0.39	100%

1. Water use by basin for the Town of Morrisville is unavailable for 2000, and so the percentage was assumed to be the same as in 2001.

Table 2-3 shows the combined water use for the certificate holders and the percentage water use in the Haw and Cape Fear River Subbasins.

Year	Total Billed Water Use (mgd)	Water Use in Haw Subbasin (mgd)	Percent Use in Haw Subbasin	Water Use in Cape Fear Subbasin (mgd)	Percent Use in Cape Fear River Subbasin
2000 ⁽¹⁾	12.07	1.97	16.3%	0.07	0.6%
2001	13.97	2.47	17.7%	0.08	0.6%
2002	13.95	3.05	21.8%	0.08	0.6%
2003	12.42	2.41	19.4%	0.07	0.6%
2004	13.42	3.03	22.5%	0.08	0.6%
2005	14.39	3.53	24.5%	0.09	0.6%
2006	13.75	3.13	22.7%	0.09	0.6%
2007	15.52	3.98	25.6%	0.11	0.7%
2008	13.93	3.96	25.6%	0.09	0.7%
2009	14.67	4.04	27.5%	0.13	0.9%
2010	16.34	4.71	28.8%	0.14	0.8%
2011	16.16	4.48	27.7%	0.13	0.8%
2012	15.23	4.19	27.5%	0.13	0.9%
2013	14.33	4.19	29.3%	0.18	1.3%

1. Water use by basin for the Town of Morrisville is unavailable for 2000, and so the percentage was assumed to be the same as in 2001.

In 1998, 1999, 2000 and 2007, Apex along with Cary implemented mandatory irrigation restrictions due to water supply limitations as well as IBT permit restrictions. The Town of Morrisville asked residents to voluntarily conserve water beginning in 1998, further implementing mandatory water use restrictions in July 1999. The restrictions reduced consumptive water use from what would normally be expected during those years. In 2000, Cary implemented a year round conservation program which includes: alternate day watering, prohibition of water waste, a rain sensor requirement on all irrigation systems, and an increasing block rate structure. In 2002, all of the Towns under this IBT certificate instituted mandatory restrictions because of regional drought conditions, but they were implemented after June which was when the highest water use occurred that year. Apex continued stage II water restrictions through December 29, 2005 when they returned to stage I, or voluntary water conservation measures. Starting April 3, 2006 the Cary and Morrisville utility systems merged. As part of this merger Morrisville adopted Cary's water conservation ordinances and Cary staff began education and enforcement in both Cary and Morrisville. On October 1, 2007, Apex adopted a year round alternate day watering

ordinance. Also in 2007, Apex, Cary, Morrisville and RTP South implemented mandatory irrigation restrictions. The changes in watering rules were made in response to Governor Easley's call for tougher water restrictions. The Apex Town Council adopted a ban on use of outdoor fountains and automated and sprinkler irrigation effective October 19, 2007. On November 1st 2007, the Town of Cary issued a Water Shortage Declaration, and citizens in Cary, Morrisville and RTP South connected to the Town of Cary's water system were no longer able to water outdoors using irrigation systems, sprinklers, or other automated watering devices; the Town also discontinued issuing three-week exemptions to its year-round watering rules for establishing new grass or reseeding. These mandatory irrigation restrictions for all the partners remained in effect until April 1, 2008.

3.0 Compliance with Certificate Conditions

A summary of the conditions of the IBT certificate dated July 12, 2001, along with the current status of compliance for each is provided below.

Condition 1 (2010 Required Return)

The holders of the certificate, after 2010, shall return water supplied from the Haw River Basin used in the Neuse River Basin to either the Haw or Cape Fear River Basins as described below.

- a) *Any water use in the Neuse Basin in excess of 16 million gallons per day adjusted on an average daily basis shall be returned.*
- b) *Water used for consumptive purposes in the Neuse Basin will not be subject to this condition.*

Compliance with this condition was not required until after 2010. However, the calculations for determining compliance with Condition 1, shown in Table 3-1, began in 2001. The amounts in column (a) are based on the percentage of billed water use in the Neuse Basin applied to the total amount of water used. As reported in the 2010 annual report, the calculation method was changed so Table 3-1 values shown reports for 2009 and earlier will differ from what is shown in later years.

Figures 5 and 6 depict both the short and long-term plans for complying with Condition 1. For IBT purposes, it would be best to return reclaimed water to the source (Haw) basin and, more specifically, directly to the water supply source – Jordan Lake. Cary began returning reclaimed water to Jordan Lake on April 19, 2005, by way of a wastewater treatment interlocal agreement (ILA) between Cary and Durham County. Per the ILA, Durham County treats wastewater for Cary from a service area that includes portions of Cary and Morrisville and all of RTP South. The reclaimed water is returned to Jordan Lake after being treated at the Durham County Triangle WWTP. Unfortunately, this arrangement to return reclaimed water to Jordan Lake is not feasible as a long-term management approach. Durham County will need the capacity of its Triangle WWTP for its own service area after 2015. A new discharge to Jordan Lake was investigated but deemed infeasible because of TMDL requirements and the nutrient management strategy that has been developed for Jordan Lake.

Since return of reclaimed water to the water supply source in the Haw basin is not feasible for the long-term, Apex, Cary, and Morrisville, which are the Western Wake Partners (Partners), investigated other alternatives and are implementing the Western Wake Regional Wastewater Management Facilities which will include reclaimed water discharge to the Cape Fear River below Buckhorn Dam. Apex, Cary and Morrisville wastewater will be treated at the new Western Wake Water Reclamation Facility.

The Western Wake Regional Wastewater Management Facilities project includes multiple components, which are being constructed through eight major construction contracts. More information about the status of the project can be found at the Western Wake Partners' website at <http://www.westernwakepartners.org>. The new facilities are expected to be on-line in 2014.

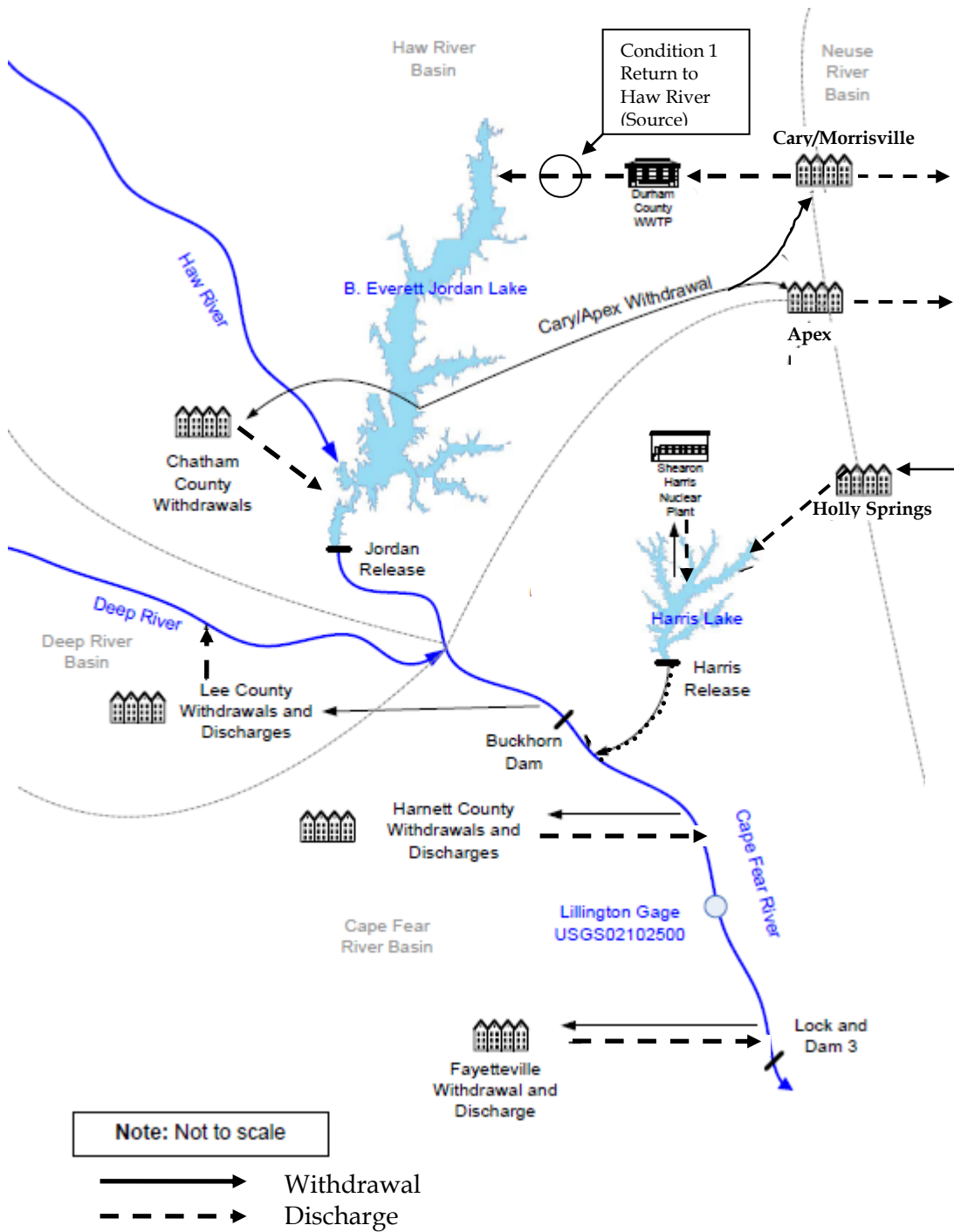


Figure 5. Return to Haw River Basin, Before Western Wake WRF Startup (during 2014)

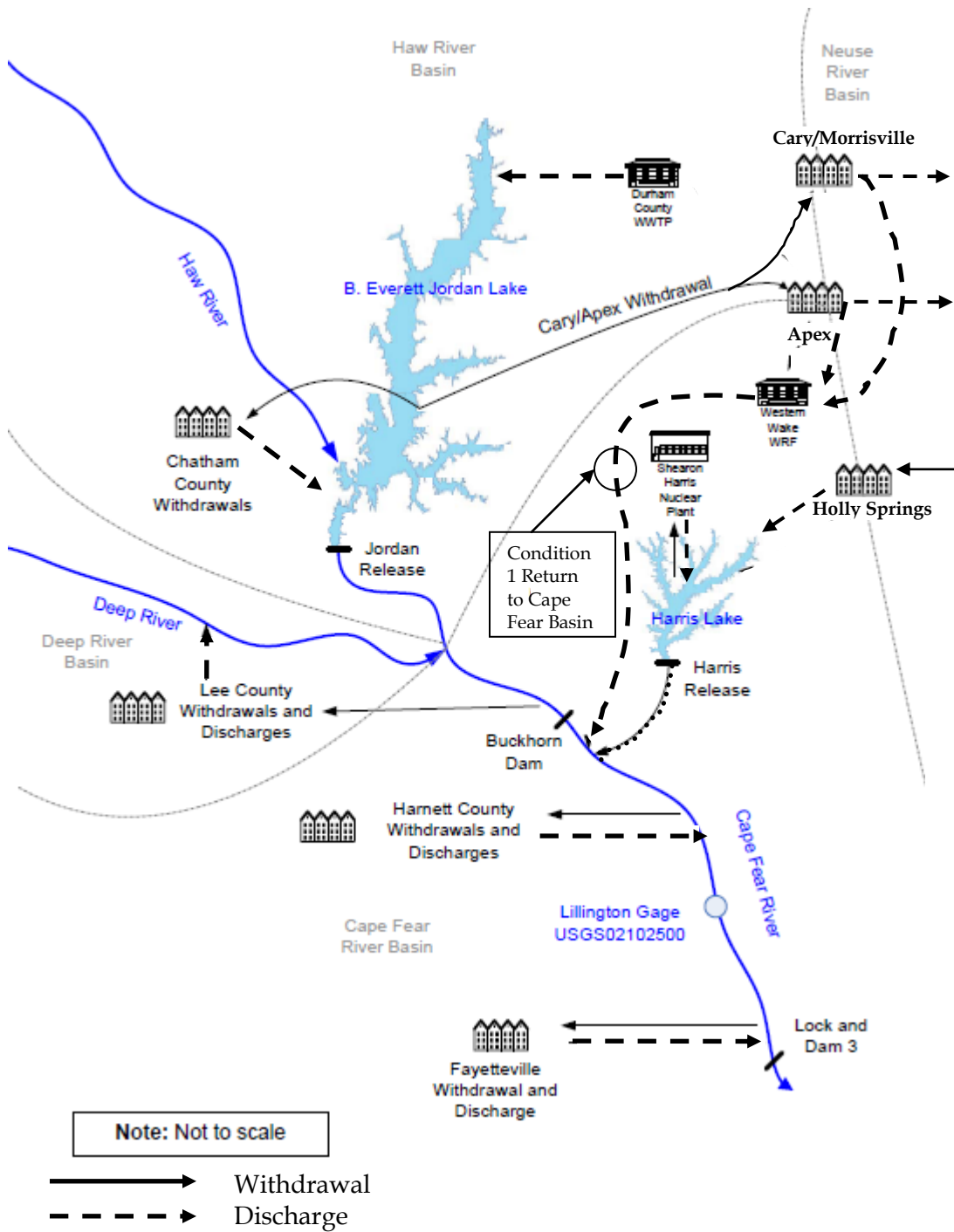


Figure 6. Proposed Return to Cape Fear River Basin, After Western Wake WRF Startup (during 2014)

Table 3-1							
Summary of Compliance with Certificate Condition No. 1							
Year	Neuse Finished Water from the Haw (mgd)	Peaking Factor	16 mgd MDD adjusted to ADD	Consumptive Use Factor (%)	Neuse Consumptive Use (from the Haw) (mgd)	Required Return if After 2010 (mgd)	Amount Returned (mgd)
	(a)	(b)	(c)=16/(b)	(d)	(e)=(a)*(d)	(f)=(a)-(c)-(e)	(g)
2001	5.1	1.64	9.76	20%	1.0	0.0	0.0
2002	11.3	1.64	9.76	20%	2.3	0.0	0.0
2003	10.6	1.64	9.76	20%	2.1	0.0	0.0
2004	11.6	1.64	9.76	20%	2.3	0.0	0.0
2005	11.9	1.64	9.76	20%	2.4	0.0	0.3
2006	11.5	1.64	9.76	20%	2.3	0.0	0.5
2007	13.3	1.64	9.76	20%	2.7	0.9	0.8
2008	11.5	1.64	9.76	20%	2.3	0.0	1.2
2009	11.5	1.64	9.76	20%	2.3	0.0	1.3
2010	12.2	1.64	9.76	20%	2.4	0.0	1.7
2011	12.0	1.64	9.76	20%	2.4	0.0	2.0
2012	11.6	1.64	9.76	20%	2.3	0.0	2.0
2013	11.4	1.64	9.76	20%	2.3	0.0	1.9
a = Average annual transfer from Haw to Neuse (see Table B-1)							
b = Peaking factor specified in Certificate for first year, and to be approved by DWR thereafter							
d = Percent consumptive use specified in Certificate for first year and to be approved by DWR thereafter							
g = Average annual wastewater discharges and water reuse in Haw and Cape Fear Basins (see Table B-1)							

Condition 2 (Facilitate Allocation Use)

The holders of this certificate shall manage the authorized transfer amount in such a way that none of the individual petitioners (Towns of Cary, Apex, Morrisville, and Wake County [for RTP South]) are prevented from fully using their respective Jordan Lake water supply allocations.

The IBT certificate requirements were not a limitation on Jordan Lake withdrawals for any of the allocation holders in 2013.

Condition 3 (Disaggregation of IBT Amount)

If the certificate holders discontinue their cooperative service agreement with each other, the maximum day permitted transfer will be adjusted by the Division of Water Resources based on the 2030 projections of each applicant at that time.

The cooperative service agreements between the certificate holders have remained in effect during 2013.

Condition 4 (Compliance and Monitoring Plan)

Prior to transferring water under this certificate, the holders of this certificate shall work with the Division of Water Resources to develop compliance and monitoring plan subject to approval by the Division. The plan shall include methodologies and reporting schedules for reporting the following information: maximum day transfer amounts, compliance with permit conditions, progress on mitigation measures, drought management, and reporting. A copy of the approved plan will be kept on file with the Division for public inspection. The Division of Water Resources shall have the authority to make modifications to the compliance and monitoring plan as necessary to assess compliance with the certificate.

Cary, Apex, Morrisville, and RTP South submitted a Compliance and Monitoring Plan concurrent with the submittal of the 2001 report. In 2003, the Division of Water Resources agreed to modify the submittal date of each annual report to be May 1 of the following year.

Condition 5 (EMC Consideration of Impacts)

If either the EIS is found at a later date to be incorrect or new information becomes available such that the environmental impacts associated with this transfer are substantially different from those projected impacts that formed the basis for the above Findings of Fact and this certificate, the Commission may reopen the certificate to adjust the existing conditions or require new conditions to ensure that the detriments continue to be mitigated to a reasonable degree.

This condition requires no action by the certificate holders.

Condition 6 (Intake Access)

The Towns of Cary and Apex shall be required to provide access at their existing intake site to other Jordan Lake water allocation holders that need access to utilize their allocation to the extent that this additional use is determined to be feasible by the Division of Water Resources. The cost associated with getting the necessary permits, engineering design, and associated construction costs are the responsibility of the allocation holder(s) requesting the access and not Cary and Apex.

The Town of Cary has continued to provide retail water service to RTP South and starting April 3rd, 2006, has merged utility services with the Town of Morrisville. Chatham County has continued to access their allocation through the Cary/ Apex raw water intake on Jordan Lake.

Condition 7 (Drought Management Plan)

Prior to transferring water under this certificate, the Towns of Cary, Apex, and Morrisville, and Wake County (for RTP South) shall develop individual water shortage response plans subject to approval by the Division. The holders of this certificate shall develop a drought management plan for the interbasin transfer, incorporating the individual water shortage response plans and subject to approval by the Division. The plans shall tie specific water conservation actions to the percent storage remaining in each of the petitioners' Jordan Lake water supply accounts. A copy of the approved plans shall be kept on file with the Division for public inspection. The Division of Water Resources shall have the authority to approve modifications to the drought management plan as necessary.

Water Shortage Response Plans for each certificate holder were submitted as attachments to the 2001 Annual Report and have been updated in later years. The current Water Shortage Response Plans, which remained unchanged during 2013, are attached in Appendix C.

Condition 8 (Stream Buffer Rules)

Within six months from the effective date of this certificate, the Towns of Cary, Apex, and Morrisville, and Wake County (for RTP South) shall enact ordinances similar to or more protective than the Neuse River buffer rules (15A NCAC 2B.0233) for the parts of their jurisdictions that are within the Jordan Lake watershed. These buffer requirements shall be subject to approval by the Division of Water Resources after consultation with the Division of Water Quality and shall be adopted as local ordinances.

Each Town's buffer ordinance was submitted with the 2001 Annual Report.

In 2004, there was one change:

1. The Town of Morrisville put 370,312 feet of 50-foot wide stream buffers under a conservation easement.

In 2006, there were three changes:

1. The Town of Apex approved amendments to UDO Section 6.1.11 Riparian Buffers which clarified the zones for riparian buffers associated with perennial streams Zone 1 of the perennial buffer was defined as the inner 60 feet and zone 2 as the outer 40 feet.
2. The Town of Apex clarified the uses permitted within riparian buffers to allow new stormwater ponds (excluding dry ponds) that control nitrogen and associated stormwater outfalls in zone 2 of the riparian buffer provided that diffuse flow is met through zone 1 of the buffer. This is the outer 20 feet for an intermittent stream buffer (50 feet) and the outer 40 feet for a perennial stream buffer (100 feet).
3. Wake County (for RTP South) adopted a Unified Development Ordinance (UDO) on April 17th, 2006, which repealed and replaced the existing Zoning and Subdivision Ordinances. The UDO consolidates development regulations into a single document.

In 2008, there was 1 change:

1. The Town of Morrisville adopted new engineering standards (*Design and Construction Ordinance*), effective February 2008, which adopted revised stormwater quantity and quality standards for the Town, including application of Neuse River Basin performance standards throughout the jurisdiction.

In 2009, there was 1 change:

1. The Town of Morrisville approved amendments to its zoning ordinance (*Zoning Ordinance*), effective July 23, 2009, which included provisions for riparian buffers in the Cape Fear River Basin in response to the Jordan Lake Nutrient Management Strategy Rules.

In 2010, there were 2 changes:

1. The Town of Apex approved changes to its riparian buffer rules (*Watershed Protection Overlay Districts*), effective November 16, 2010, which incorporated the requirements of the Jordan Lake Nutrient Management Strategy Rules.

2. The Town of Cary approved minor changes to its riparian buffer rules (Land Use Development Ordinance) to remove allowable uses in its table of uses that conflicted with the Town's 100 ft. buffer rule and the state's 50 ft. buffer rule.

In 2011, there were 2 changes:

1. The Town of Cary approved modifications to the Jordan Lake Buffer to comply with the Jordan Lake Rules passed in 2009, effective July 14, 2011.
2. The Town of Morrisville adopted a Riparian Buffer Ordinance (for lands within both the Neuse River Basin and the Jordan Lake Watershed) to comply with the Jordan Lake Rules.

In 2012, there was 1 change:

1. The Town of Morrisville made minor changes to its Riparian Buffer Ordinance that it had adopted in 2011 to comply with the Jordan Lake Rules, as requested by NC DWQ.

In 2013, there were no changes.

Appendix A:
Daily Tracking of Combined Jordan Lake Water Supply
Allocations for 2013

Appendix B

Daily Interbasin Transfer Estimates for 2013

Appendix C:
Towns of Cary and Apex Water Shortage Response Plans
Updated for 2013